AMENDMENTS

IN THE CLAIMS:

Please amend claims as set forth below.

Claims 1-38. (Canceled).

39. (Currently amended) A method for constructing a synthetic polynucleotide from which a polypeptide is producible to confer ~~a selected phenotype upon an organism of interest or part thereof~~ **an immune response to a target antigen in a mammal of interest** in a different quality than that conferred by a parent polynucleotide that encodes the same polypeptide, the method comprising: (a) selecting a first codon of the parent polynucleotide for replacement with a synonymous codon, wherein the synonymous codon is selected on the basis that it exhibits a different ~~phenotypic~~ preference **for conferring an immune response** than the first codon in a comparison of ~~phenotypic~~ **immune response** preferences in test ~~organisms~~ **mammals** ~~or parts thereof~~, wherein the test ~~organisms~~ **mammals** are selected from the group consisting of ~~organisms~~ **mammals** of the same species as the ~~organism~~ **mammal** of interest and ~~organisms~~ **mammals of a different species than the mammal** ~~that are related to the organism~~ of interest; and (b) replacing the first codon with the synonymous codon to construct the synthetic polynucleotide~~, wherein the selected phenotype is other than a phenotype conferred upon a cell by a polynucleotide that is expressed in the cell and that encodes the polypeptide~~.

40. (Currently amended) A method according to claim 39, wherein the ~~phenotypic~~ **immune response** preferences of codons in the test ~~organisms~~ **mammals** ~~or parts~~ are compared by: (i) separately introducing into the test ~~organisms~~ **mammals** ~~or parts~~ individual synthetic constructs, each of which comprises a regulatory polynucleotide operably linked to a tandem repeat of a codon fused in frame with a reporter polynucleotide that encodes a reporter protein, which produces, or which is predicted to produce, ~~a corresponding phenotype~~ **an immune response** selected from the group consisting of the ~~selected phenotype~~ **immune response to the target antigen** and ~~an phenotype~~ **an immune response** of the same class as ~~the selected phenotype~~ **the immune response to the target antigen**; and (ii) comparing the quality of ~~the phenotype~~ **the immune responses** displayed by the test ~~organisms~~ **mammals** ~~or parts~~ to determine the relative ~~phenotypic~~ **immune response** preferences of the codons.

41. (Currently amended) A method according to claim ~~39~~ **40**, wherein the reporter protein produces the ~~selected phenotype~~ **immune response to the target antigen**.

42. (Currently amended) A method according to claim ~~39~~ **40**, wherein the reporter protein does not produce the ~~selected phenotype~~ **immune response to the target antigen** but produces ~~the same class of phenotype as the selected phenotype~~ **an immune response of the same class as the immune response to the target antigen**.

43. (Previously presented) A method according to claim 41 or claim 42, wherein the reporter protein is selected from antigens derived from pathogenic organisms, cancer antigens, self antigens, transplantation antigens, growth factors, hormones and toxins.

44. (Currently amended) A method according to claim 39, wherein the phenotype is selected from immunity, **and** antigen tolerance~~, angiogenesis, anti-angiogenesis, amelioration of clinical symptoms, reduced or increased cell death, reduced or increased cell differentiation, reduced or increased cell proliferation, tumour or cancer regression, growth and repair of tissue or organ, decreased fibrosis, inhibition or reversal of cell senescence, increased or reduced cell migration, differential expression of protein between different cells or tissues of an organism or part thereof, trauma recovery, recovery from burns, antibiotic resistance or sensitivity, herbicide tolerance or sensitivity, starch biosynthesis or modification, fatty acid biosynthesis, disease resistance or tolerance, pest resistance or tolerance including insect resistance or tolerance, viral resistance or tolerance, fungal resistance or tolerance, a metabolic trait including sucrose metabolism, frost resistance or tolerance, stress tolerance, and improved food content or increased yields~~.

45. (Canceled).

46. (Currently amended) A method according to claim ~~45~~ **39**, wherein the immune response is a humoral immune response.

47. (Currently amended) A method according to claim ~~45~~ **39**, wherein the immune response is a cell mediated immune response.

48. (Currently amended) A method according to claim ~~45~~ **39**, wherein the immune response is an innate immunity mediated response.

49. (Currently amended) A method according to claim ~~39~~ **40,** wherein the synthetic constructs are introduced into the test ~~organisms~~ **mammals** using the same or similar mode of introduction.

50. (Currently amended) A method according to claim ~~39~~ **40,** wherein the synthetic constructs are introduced into the test ~~organisms~~ **mammals** at the same or corresponding site.

51. (Currently amended) A method according to claim ~~39~~ **40,** wherein ~~the organism of interest is a mammal and~~ the synthetic constructs are introduced by oral, intravenous, intramuscular, intranasal, buccal, subcutaneous, transdermal, buccal or sublingual route.

52. (Currently amended) A method according to claim ~~39~~ **40,** wherein the synthetic constructs are introduced into one or more ~~of cell~~ or tissue types of the ~~organism of interest~~ **test mammals**.

53. (Currently amended) A method according to claim 52, wherein the synthetic constructs are introduced into cells selected from muscle cells, **and** skin cells, ~~brain cells, lung cells, kidney cells, pancreas cells, cells of a reproductive organ, heart cells, vascular cells, liver cells, eye cells, flower cells, meristematic cells, root cells and leaf cells~~.

54. (Currently amended) A method according to claim ~~39~~ **40,** wherein the tandem repeat of each of the synthetic constructs comprises at least three copies of the corresponding codon.

55. (Currently amended) A method according to claim 39, wherein the synonymous codon is selected such that it has a higher ~~phenotypic~~ **immune response** preference than the first codon.

56. (Currently amended) A method according to claim ~~17~~ **39,** wherein the synonymous codon is selected when the ~~quality of the phenotype~~ **immune response** conferred by the synthetic construct comprising a tandem repeat of the synonymous codon is at least about 5% higher than the ~~quality of the phenotype~~ **immune response** conferred by the synthetic construct comprising a tandem repeat of the first codon.

57. (Currently amended) A method according to claim 39, wherein the synonymous codon is selected such that it has a lower ~~phenotypic~~ **immune response** preference than the first codon.

58. (Currently amended) A method according to claim 57, wherein the synonymous codon is selected when the ~~quality of the phenotype~~ **immune response** conferred by the synthetic construct comprising a tandem repeat of the synonymous codon is at least about 5% lower than the ~~quality of the phenotype~~ **immune response** conferred by the synthetic construct comprising a tandem repeat of the first codon.

59. - 65 (Canceled).

66. (Withdrawn-Currently amended) A method for determining the ~~phenotypic~~ **immune response** preference of a first codon in ~~an organism~~ a mammal of interest ~~or part thereof~~, the method comprising: (a) introducing a synthetic construct into a test ~~organism~~ **mammal** ~~or part thereof~~, wherein the test ~~organism~~ **mammal** is selected from the group consisting of ~~an organism~~ **a mammal** of the same species as the ~~organism~~ **mammal** of interest and ~~an organism~~ **a mammal** of a different species than ~~that is related to the~~ ~~organism~~ **mammal** of interest, the synthetic construct comprising a regulatory polynucleotide operably linked to a tandem repeat of the first codon fused in frame with a reporter polynucleotide that encodes a reporter protein, which produces, or which is predicted to produce, a**n immune response to a target antigen** ~~selected phenotype~~ or a**n immune response** ~~phenotype~~ of the same class as the **immune response to a target antigen** ~~selected phenotype~~; and (b) determining the quality of the corresponding ~~phenotype~~ **immune response** displayed by the **test mammal** ~~organism or part, wherein the selected phenotype or the phenotype of the same class as the selected phenotype is other than a phenotype conferred upon a cell by a polynucleotide that is expressed in the cell and that encodes the polypeptide~~.

67. (Withdrawn-Currently amended) A method according to claim 66, further comprising: comparing (i) the quality of the corresponding ~~phenotype~~ **immune response** displayed by a test ~~organism or part thereof~~ **mammal** to which a synthetic construct comprising a tandem repeat of the first codon was provided; and (ii) the quality of the corresponding ~~phenotype~~ displayed by a test ~~organism or part thereof~~ **mammal** to which a synthetic construct comprising a tandem repeat of a second codon was provided, wherein the second codon encodes the same amino acid as the first codon, to thereby determine the ~~phenotypic~~ **immune response** preference of the first codon relative to the ~~phenotypic~~ **immune response** preference of the second codon in the test **mammal** ~~organism or part~~.

68. - 69. (Canceled).

70. (Withdrawn-Currently amended) A method according to claim 66, further comprising: introducing the synthetic construct into a selected cell of the test ~~organism or part thereof~~ **mammal**.

71. -73. (Canceled).

74. (Withdrawn-Currently amended) A method of modulating the quality of **an immune response** ~~selected phenotype~~ that is displayed by ~~an organism~~ **a mammal** of interest ~~or part thereof~~ and that results from the expression of a parent polynucleotide that encodes the polypeptide, the method comprising: introducing into the ~~organism or part~~ **mammal** a synthetic polynucleotide that is distinguished from the parent polynucleotide by the replacement of a first codon in the parent polynucleotide with a synonymous codon that exhibits a different ~~phenotypic~~ **immune response** preference than the first codon in the mammal ~~organism or part~~, wherein ~~the selected phenotype is other than a phenotype conferred upon a cell by a polynucleotide that is expressed in the cell and that encodes the polypeptide~~ **the synthetic polynucleotide is constructed according to the method of claim 39**.

75. (Withdrawn-Currently amended) A method of enhancing the quality of **an immune response** ~~selected phenotype~~ that is displayed by ~~an organism~~ **a mammal** of interest ~~or part thereof~~ and that results from the expression of a parent polynucleotide that encodes the polypeptide, the method comprising: introducing into the ~~organism or part~~ **mammal** a synthetic polynucleotide that is distinguished from the parent polynucleotide by the replacement of a first codon in the parent polynucleotide with a synonymous codon that exhibits a higher ~~phenotypic~~ **immune response** preference than the first codon in the **mammal** ~~organism or part~~, wherein ~~the selected phenotype is other than a phenotype conferred upon a cell by a polynucleotide that is expressed in the cell and that encodes the polypeptide~~ **the synthetic polynucleotide is constructed according to the method of claim 55**.

76. (Withdrawn-Currently amended) A method of reducing the quality of **an immune response** ~~selected phenotype~~ that is displayed by ~~an organism~~ **a mammal** of interest ~~or part thereof~~ and that results from the expression of ~~a~~ parent polynucleotide that encodes the polypeptide, the method comprising: introducing into the ~~organism or part~~ **mammal** a synthetic polynucleotide that is distinguished from the parent polynucleotide by the replacement of a first codon in the parent polynucleotide with a synonymous codon that exhibits a lower ~~phenotypic~~ **immune response** preference than the first codon in the **mammal** ~~organism or part~~, wherein ~~the selected phenotype is other than a phenotype conferred upon a cell by a polynucleotide that is expressed in the cell and that encodes the polypeptide~~ **the synthetic polynucleotide is constructed according to the method of claim 57**.

77. (New) A method according to claim 39, wherein the quality is a measure of the strength, intensity or grade of the immune response.

78. (New) A method according to claim 39, wherein the immune response conferred by the synthetic polynucleotide is stronger than the immune response conferred by the parent polynucleotide.